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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,646	12/21/2001	Saswati Datta	8821LS	1492

27752 7590 11/10/2003

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EXAMINER

HASSANZADEH, PARVIZ

ART UNIT PAPER NUMBER

1763

DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/027,646	Applicant(s) DATTA ET AL.	
	Examiner Parviz Hassanzadeh	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 6-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>1/02:6/03</u> | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-16, drawn to apparatus, classified in class 156, subclass 345.43.
- II. Claims 17-19, drawn to method, classified in class 216, subclass 67.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus can be used for treating inside of a tube wherein the tube being the dielectric intermediate or treating inside of a chamber rather than a surface of a workpiece.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Claim 1 is generic to a plurality of disclosed patentably distinct species comprising:

Species 1, Figs. 1-3;

Species 2, Fig. 4;

Species 3, Fig. 5;

Species 4, Fig. 6; and

Species 5, Fig. 7.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, even though this requirement is traversed.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Larry L. Houston on 10/30/03 a provisional election was made with traverse to prosecute the invention of Group I, Species 1, claims 1-5. Affirmation of this election must be made by applicant in replying to this Office action. Claims 6-19 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

The drawings are objected to because: in Fig. 4, it is suggested to exchange label numbers 30 and 50 in accord with page 11 of the specification. A proposed drawing correction

or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 82 on page 8, line 4; 34 on page 10, line 29; 39 on page 11, line 10; 39 on page 13, line 23. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Crowe et al (US Patent Application Publication No. 2003/0052096 A1).

Crowe et al teach an atmospheric pressure plasma generating apparatus (Fig. 1) for treating a surface of a workpiece, the apparatus comprising:

- a plurality of power electrodes 115 connected to a power source HV;
- a ground electrode 150;
- a dielectric 125 having capillary through holes 120 for arranging the power electrodes 115 therein;

a gas source inlet 105 coupled to the upper part of the insulator 125 and providing gas flow through the insulator through holes; and

wherein plasma discharged from the grounded electrode may be positioned proximate the surface of an object to be treated (abstract and paragraphs 0022-0024).

Further regarding claims 2, 3: as shown in Fig. 1, the power electrodes 115 are inserted into the capillary through holes 120, and the plasma gas flows through the capillary through holes 120 too.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koinuma et al (US Patent No. 5,549,780).

Koinuma et al teach an atmospheric pressure plasma generating apparatus (Fig. 1) for treating a surface of a workpiece, the apparatus comprising:

a power electrode 11 connected to a power source 14;

a ground electrode 12;
a cylindrical insulator 13 disposed between the central electrode 1 and the outer electrode 12;

a gas source 17 coupled to the upper part of the electrode assembly and a discharge 15 defined at the lower part of the electrode assembly; and

the discharge 15 is facing a substrate 1 (column 5, lines 46-63).

Koinuma et al fail to teach a plurality of power electrode, ground electrodes and insulators.

It is held *in re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) that a mere duplication of parts has no patentable significance unless a new and unexpected result is produced therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to duplicate electrode assembly in order to extend the plasma treat over a larger surface of the substrate.

Regarding claim 4, change in shape: It was held in *re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) that the shape was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular shape was significant. (Also see MPEP 2144.04(d)). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to select the desire shape of the gas discharge in order to direct the plasma onto a larger area of the surface of the substrate.

Regarding claim 5, change in size: It was held in *re Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984) that where the only difference between the prior art and the claims was a recitation of relative

dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the distance between the power electrode and the ground electrode in order to sustain a stable discharge rather than arcing between the two electrodes.

Claims 4, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crowe et al (US Patent Application Publication No. 2003/0052096 A1).

Crowe et al teach all limitations of the claims as discussed above except for the outer flow channel having a greater cross-section area than the inner flow channel, and the power electrode being spaced apart from the ground electrode by 10-10 mm.

Regarding claim 4, change in shape: It was held in *re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) that the shape was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular shape was significant. (Also see MPEP 2144.04(d)). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to select the desire shape of the gas discharge in order to direct the plasma onto a larger area of the surface of the substrate.

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the time of the invention to adjust the distance between the power electrode and the ground electrode in order to sustain a stable discharge rather than arcing between the two electrodes.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kim et al (US Patent No. 6,632,323 B2) an atmospheric plasma generating apparatus including a plurality of pin electrode, capillary holes and ground electrode;

Ebata et al (US Patent No. 6,406,590 B1) teach an atmospheric plasma generating apparatus including a power electrode, dielectric intermediate and gas inlet and outlet channels;

Nishikawa et al (US Patent No. 6,244,211 B1) teach a plasma generating apparatus including a power electrode, a ground electrode, dielectric intermediate and gas inlet channels;

Selwyn (US Patent No. 5,961,772) teaches an atmospheric plasma generating apparatus including a power electrode, a ground electrode, and a gas inlet and outlet channel.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parviz Hassanzadeh whose telephone number is (703)308-2050. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703)308-1633. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0661.

P. Hassanzadeh
Parviz Hassanzadeh
Primary Examiner
Art Unit 1763

November 3, 2003